

# Buttonhole Cholecystectomy: Modified Approach – A Prospective Study of Twenty Five Cases

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## ABSTRACT

**Background:** Cholelithiasis is a common disorder affecting large number of population in the world. Open cholecystectomy has been the treatment of choice for symptoms of gall stones for many years. Another less explored type of cholecystectomy is button hole cholecystectomy which is performed through a single incision of 2.5 cm in length. This study aimed at evaluating cholecystectomy through a button hole incision and its efficacy and decrease in post-operative morbidity. **Methods:** Twenty five patients reporting on two specific days of a week with cholelithiasis, treated and followed up at Guru Nanak Dev hospital Punjab were included in the study. **Results:** The study was conducted on 25 patients consisting of 19 females and 6 males. The most common symptom was right hypochondrial pain followed by vague dyspepsia. Fever was present in 3 patients. **Conclusion:** Buttonhole cholecystectomy is a safe and easily performed procedure which does not require any sophisticated equipment. It is a patient friendly procedure and does not require the elaborate layout of laparoscopic cholecystectomy. It is also less costly and requires no special training.

**Keywords:** Cholelithiasis, Laparoscopic Cholecystectomy.

## INTRODUCTION

Cholecystectomy is the most commonly performed elective surgery.<sup>[1]</sup> It remains the standard treatment for benign gall bladder disease with proven efficacy. Calculus cholecystitis remains the commonest indication for cholecystectomy as 98% of the patients with symptomatic gall bladder disease are found to be harbouring stones in their gall bladder.<sup>[2]</sup> Cholecystectomy remains the gold standard for benign gall bladder disease. The pain and long hospital stay associated with standard open cholecystectomy is due to the long incision. The latest development laparoscopic cholecystectomy first performed by Philip Mouret in 1987 offers the main advantage of reduced hospital stay and less pain perception.<sup>[1]</sup> However this requires costly equipments infrastructure and expertise. Another less explored type of cholecystectomy is button hole cholecystectomy which is performed through a single incision of 2.5 cm in length.<sup>[3-7]</sup> This procedure was not popular earlier. This could be due to inadequate exposure deep inside and difficulty in ligating cystic duct and artery. We got over this difficulty by using long and narrow retractors. This

study aimed at evaluating cholecystectomy through a button hole incision and its efficacy and decrease in post-operative morbidity.

## MATERIALS AND METHODS

Twenty five patients reporting on two specific days of a week with cholelithiasis, treated and followed up at Guru Nanak Dev hospital Punjab were included in the study. Patients found to be having common bile duct stones were excluded from the study. The patients underwent radiological investigation in the form of ultrasonography and all base line blood investigations were done for fitness for surgery. All cases were done under general anaesthesia with full muscle relaxation. A 2cm subcostal incision was given. The abdominal muscles were split. On opening the peritoneum the anatomy was first ascertained by retracting the duodenum medially and transverse colon downwards by keeping sponges. This exposes the fundus of the gall bladder which is readily identified and then Calot's triangle is skeletonised. Cystic artery and duct was ligated. The gall bladder was removed in retrograde fashion in most cases.

## RESULTS

The study was conducted on 25 patients consisting of 19 females and 6 males. The most common

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symptom was right hypochondrial pain followed by vague dyspepsia. Fever was present in 3 patients. There was no past history of jaundice. Fifteen patients were overweight. The procedure could be performed even in obese patients. Three patients required lengthening of incision to 5 cm. The requirement of post-operative analgesia was measured in form of intramuscular pentazocin [30mg] on day of surgery followed by oral diclofenac tablets.

**Table 1: Age wise distribution**

Age in years	No. of patients
Below 20	1
20-29	4
30-39	7
40-49	6
50-59	4
60-69	3

**Table 2: Presenting symptoms**

Presenting symptom	No. of patients
Biliary pain	23
Nausea and vomiting	13
Flatulence	13
Fat intolerance	7
Jaundice	nil
Fever	3
Asymptomatic	1

**Table 3: Mean operative time**

Operative time in minutes	No. of patients
35-40	5
40-45	17
>45	3

**Table 4: Characteristics of patients in whom incision had to be extended**

Age	Sex	Height	Weight	Anatomy
30	Male	162	84	Normal
42	Male	165	98	Short cystic duct
50	Female	156	79	Normal

**Table 5: Comparison of various parameters in patients who underwent button hole cholecystectomy and those who required lengthening of incision**

Parameter	Measurement	All cases	Button hole cholecystectomy	Extended incision
Post op. analgesic requirement	Avg. no. of doses of pentazocin[30 mg]	2.4	1.7	3.6
Post op. hosp stay	Days	4	1.8	4.5
Wound infection	No. of patients	2	1	1
Return to work	Days	12	8	16
Mean operative time	Minutes	44.6	42.1	48.3
Average blood loss	ml	66	55	127

## DISCUSSION

Cholelithiasis is a common disorder affecting a large number of populations in the world. Of these 20% are symptomatic at the time of diagnosis, while as many as 80% remain asymptomatic during life time. Women are three times more prone to develop gallstones than men, and first degree relatives of patients with gallstones have a twofold greater prevalence. Obesity, pregnancy, dietary factors, Crohn's disease, terminal ileal resection, gastric surgery, Hereditary Spherocytosis, Sickle cell disease and Thalassemia are all associated with an increased risk of developing gall stones. Open cholecystectomy has been the treatment of choice for symptomatic gall stones for many years the first ever open cholecystectomy was performed by Carl Langenbach in 1882.<sup>[1]</sup>

Open cholecystectomy is a major surgical procedure and although has a proven efficacy and safety this procedure is associated with long post-operative hospital stay of 7-9 days, significant post-operative morbidity in terms of pain at operative site and long term off from work. The pain and long hospital stay associated with standard cholecystectomy is due to big incision used in standard procedure So as an attempt towards miniaturization, there has been evolution of small incision open cholecystectomy, button hole cholecystectomy and laparoscopic cholecystectomy.

The technique of small incision open cholecystectomy was developed as an effort to reduce discomfort associated with a long subcostal incision. One can avoid the potential complications associated with standard cholecystectomy like increased post-operative pain, disability, long time to return back to work and scarring by performing button hole cholecystectomy. In this surgery, the gall bladder is removed through a 3-4 cm incision. However, before the widespread use of this technique laparoscopic cholecystectomy arrived in the general practise in 1990 and rapidly became the popular procedure for gall bladder surgery. Modern day laparoscopic cholecystectomy was described by Reddick and Oslen in 1998.<sup>[2]</sup>

Laparoscopic cholecystectomy has advantages in terms of reduced post-operative hospital stay, reduced pain perception and faster return to work. But it requires expertise and expensive infrastructure. This has resulted in the emergence of buttonhole cholecystectomy in which cholecystectomy is done through a 2cm incision.

There are number of clinical situations, when present, make laparoscopic approach difficult and should prompt consideration to open cholecystectomy, like morbid obesity, cirrhosis, portal hypertension, severe obstructive lung disease, previous surgery and pregnancy. Laparoscopic surgery can be performed in pregnant patient in the first two trimesters;<sup>[3,4]</sup> while open cholecystectomy

should be considered the procedure of choice in patient with severe cholecystitis, empyema of gall bladder, acute cholangitis, gallbladder perforation, cholecystoenteric fistula or a suspected gall bladder neoplasm. In these situations button hole cholecystectomy has emerged as a promising surgery.

In contrast to conventional open procedure in which all three abdominal wall muscles, including neurovascular bundles coming on the way are cut, small incision open cholecystectomy technique involves retraction of the rectus muscle without cutting any of the major cutaneous nerves leading to less post-operative pain.<sup>[5]</sup> Button hole cholecystectomy is an effective alternative to laparoscopic cholecystectomy, especially in centres where laparoscopic facilities are not available.

Small incision open cholecystectomy may confer certain advantages such as decrease in post-operative pain and morbidity and rapid return to normal life which are similar to those of laparoscopic cholecystectomy, while avoiding the increased rate of bile duct injury associated with laparoscopic cholecystectomy. In addition small incision open cholecystectomy is more cost effective than laparoscopic cholecystectomy because it obviates the need for sophisticated equipment and specialized medical personal.

We could perform the procedure in 88% of cases. In others the incision had to be extended to 5cm to facilitate cholecystectomy. The major disadvantage of button hole cholecystectomy is accessibility which was overcome with the help of narrow but deep retractors.

Thus it is seen that buttonhole cholecystectomy is a safe and easily performed procedure which does not require any sophisticated equipment.<sup>[10]</sup> It is a patient friendly procedure and does not require the elaborate layout of laparoscopic cholecystectomy.<sup>[8,9]</sup> It is also less costly and requires no special training.

## CONCLUSION

Buttonhole cholecystectomy is a safe and easily performed procedure which does not require any sophisticated equipment. It is a patient friendly procedure and does not require the elaborate layout of laparoscopic cholecystectomy. It is also less costly and requires no special training.

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